

### Patent Claims

1. Process for the permanent and abrasion-resistant coloured inscription or marking of plastics, characterised in that use is made of a layer system which consists of two layers lying one on top of the other and separated by a support film, where the first layer consists of a plastic which comprises an energy absorber intrinsically or as a layer, and the second layer applied to a support film serves as inscription medium and comprises a colorant and a polymer component, where the polymer component is welded to the plastic surface under the action of laser light during the inscription/mark-  
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2. Process according to Claim 1, characterised in that the first layer is composed of one or more support layers, and the energy absorber is located on or between these support layers.
3. Process according to Claim 1 or 2, characterised in that the energy absorber is selected from the group consisting of carbon, metal oxides, silicates, SiO<sub>2</sub> flakes, metal oxide-coated mica and/or SiO<sub>2</sub> flakes, conductive pigments, sulfides, phosphates, BiOCl, anthracene, perylenes, rylene, pentaerythritol, or mixtures thereof.
4. Process according to one of Claims 1 to 3, characterised in that the plastic layer comprises 0.01 – 20% by weight of energy absorber.
5. Process according to one of Claims 1 to 4, characterised in that the inscription medium essentially consists of a binder, colorants, polymer component and optionally additives.
6. Process according to Claim 5, characterised in that the binder is selected from the group consisting of cellulose, cellulose derivatives, polyvinyl alcohols, polyvinylpyrrolidones, polyacrylates, polymethacrylates, epoxy resins, polyesters, polyethers, polyisobutylene, polyamide, polyvinylbutyrals and mixtures thereof.

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7. Process according to one of Claims 1 to 6, characterised in that the inscription medium comprises the polymer component in dissolved and/or particulate form in amounts of 30 – 90% by weight.
- 5 8. Process according to one of Claims 1 to 7, characterised in that the polymer component in particulate form has particle sizes of 10 nm – 100 µm.
- 10 9. Process according to one of Claims 1 to 8, characterised in that the polymer component consists of polyesters, polycarbonates, polyolefins, polystyrene, polyimides, polyamides, polyacetals and copolymers of the said polymers, and terpolymers of vinyl chloride, dicarboxylates and vinyl acetate or hydroxyl/methyl acrylate or mixtures thereof.
- 15 10. Process according to one of Claims 1 to 9, characterised in that the inscription medium comprises organic and/or inorganic colorants.
- 20 11. Process according to one of Claims 1 to 10, characterised in that the inscription medium comprises 0.1 – 30% by weight of colorants, based on the polymer component fraction.
- 25 12. Plastics which have been laser-marked or laser-inscribed by the process according to Claim 1.
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